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Rediscovery of "Extinct" *Lentipes concolor* (Pisces: Gobiidae) on the Island of Oahu, Hawaii[1]

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ABSTRACT: The endemic Hawaiian goby, *Lentipes concolor* (Gill), has been discovered in five streams on Oahu: Punaluu, Kaluanui, Waihee, Kawaiiki, and Maakua Gulch.

IN 1989, THE DIVISION of Aquatic Resources (DAR) initiated stream surveys (funded in part by federal aid in sport fish restoration and other federal aid programs) to inventory the native freshwater fauna of Hawaii. Such baseline information is critically needed to formulate policies to protect and manage these unique native resources.

Earlier statewide surveys conducted by other agencies have reported the endemic Hawaiian goby, *Lentipes concolor* (Gill), to be rare or nearly extinct (Timbol et al. 1980) on the island of Oahu and present in only 6–15% of the perennial streams on the islands of Hawaii, Maui, Molokai, and Kauai (Maciolek 1977, Kinzie 1990). Recent reconnaissance surveys by DAR biologists have greatly increased the number of streams in which *L. concolor* has been found statewide. Large populations of *L. concolor* have even been found in the upper reaches of intermittent streams on south Molokai, once thought to be devoid of native fishes.

On Oahu, *L. concolor* has been discovered in the Punaluu, Kaluanui, and Waihee streams on the windward side and Kawaiiki Stream (Anahulu River system) on the north shore (Figure 1). During a snorkel survey of a 760-m section of Punaluu Stream on 11 April 1990, we observed six female *L. concolor*, ranging in total length from 32 mm to 38 mm, between elevations of 60 to 80 m. Two of the larger females appeared gravid. On 26 November 1990, we observed 10 male and female *L. concolor* in the same size range during a snorkel survey of Kaluanui Stream (Sacred Falls) at an elevation of 90 m, just below the first waterfall. The presence of displaying males and gravid females suggests a reproductively active population. During a tour of the Waialua Sugar Company's reservoir and ditch system on 5 August 1991, we caught a small female *L. concolor* 25 mm long in Kawaiiki Stream at an elevation of 210 m, where an access road crosses the stream. We caught two male specimens in Waihee Stream on 13 September 1991. The two males, one measuring 25 mm long and the other 38 mm long, were caught at an elevation of 70 m during a snorkeling survey of a 100-m section of the stream.

Specimens collected in the field were brought back to the laboratory for positive identification and preserved for future reference. Body coloration (particularly for sex identification) and upper lip morphology (Kinzie 1990) were used in species identification.

In February 1992, Ron Englund, an aquatic biologist with Environmental Technologies International in Honolulu, observed three *L. concolor* in Maakua Gulch, near Hauula, Oahu (pers. comm.). According to Englund, Maakua Gulch, which contains an intermittent stream, was dry for the first 4.83 km (3 miles). He observed one *L. concolor* in the first pool he encountered at an elevation of 180 m and two additional specimens farther upstream.

Although only small numbers of *L. concolor* have been observed on Oahu thus far, finding them in the lower reaches of these streams is encouraging. If trends observed on the neighbor islands hold true for Oahu, there

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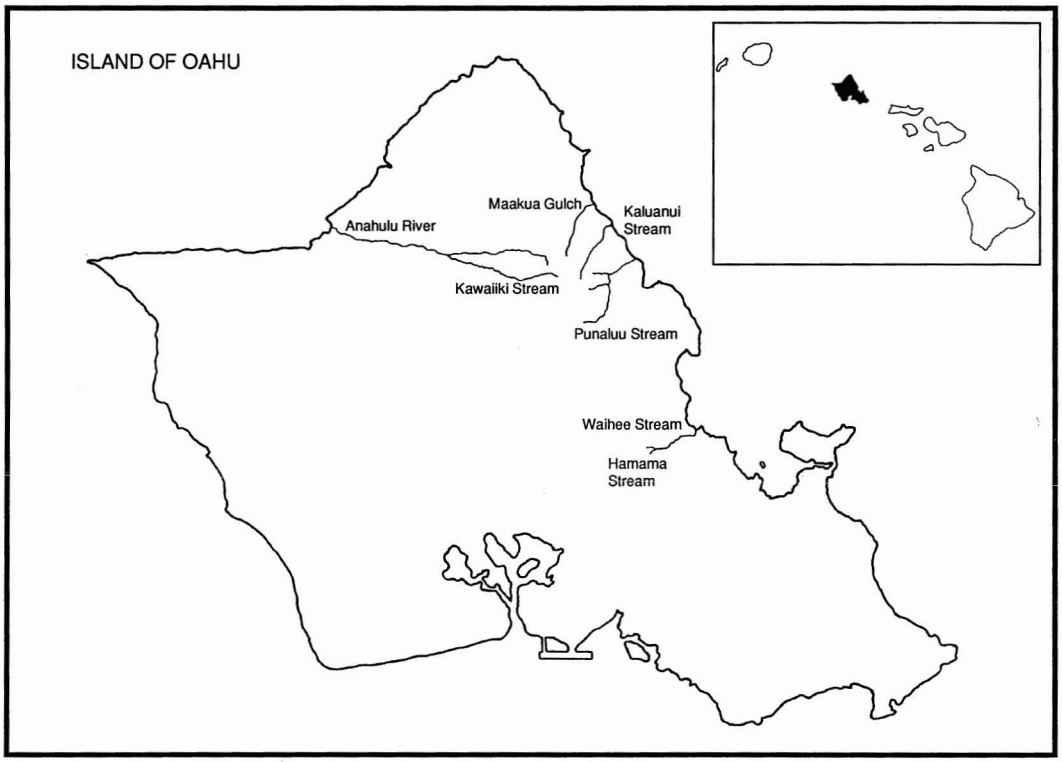

FIGURE 1. Map of Oahu showing the five streams where *Lentipes concolor* has been found.

is a strong possibility that more specimens of *L. concolor* will be found as we survey the upper reaches of these streams. The discovery of *L. concolor* in Kawaiiki Stream is especially encouraging. The Anahulu River, into which it flows, is warm, slow-moving, and turbid where it meets the sea, unlike the "typical" stream habitat of *L. concolor*. If the Anahulu River can attract and sustain *L. concolor* recruits, then perhaps other seemingly degraded streams on Oahu also harbor *L. concolor* and other native stream gobies.

Englund's discovery of *L. concolor* in Maakua Gulch is also significant, because it parallels discoveries made in intermittent streams on south Molokai and Hawaii. It opens up the possibility of finding *L. concolor* in the upper reaches of other intermittent streams statewide.

The discovery of *L. concolor* in Punaluu, Kaluanui, and Waihee streams is consistent with our previous experience of finding *L. concolor* and *Sicyopterus stimpsoni* (Gill) in the same streams. In each of these streams *S. stimpsoni* was first found in the lower, more easily accessible reaches of the stream, suggesting that *S. stimpsoni* may be useful as an "indicator" species for *L. concolor*.

As part of the ongoing statewide stream survey program, additional surveys are planned for other Oahu streams and for the upper reaches of the Punaluu, Kaluanui, and Kawaiiki streams.

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